United States Department of the Interior

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IN REPLY REFER TO

JUN 23 1995

Memorandum

To: Deputy Regional Director, Region 1
Portland, Oregon

From: Acting Assistant Regional Director, North Pacific Coast Ecoregion
Portland, Oregon

Subject: Biological/Conference Opinion Regarding a Proposed Amendment to and Approval of an Implementation Agreement for an Incidental Take Permit (PRT-777837) held by the Murray Pacific Corporation for the Mineral Tree Farm, Lewis County, Washington (FWS Reference 1-3-95-FW-919) 1-3-95-SP-93, 1-3-95-HCP-SP-004

This biological/conference opinion responds to your June 19, 1995, request for consultation pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act). At issue are the effects that may occur to the threatened northern spotted owl (*Strix occidentalis caurina*) (owl), marbled murrelet (*Brachyramphus marmoratus marmoratus*) (murrelet), bald eagle (*Haliaeetus leucocephalus*), grizzly bear (*Ursus arctos = U.a. horribilis*), the endangered gray wolf (*Canis lupus*), and to unlisted species under an amended incidental take permit proposed to be issued to the Murray Pacific Corporation (Murray) of Tacoma, Washington by the U.S. Fish and Wildlife Service (Service) pursuant to section 10(a)(1)(B) of the Act. Also at issue are the effects to unlisted species from the proposed approval of an Implementation Agreement (IA) for the Amended Habitat Conservation Plan (HCP Amendment) (Service and Murray 1995) between Murray, the Service and the National Marine Fisheries Service (NMFS).

This biological/conference opinion are based on information provided in the following sources: the Habitat Conservation Plan for the Northern Spotted Owl (original owl HCP) (Murray 1993); the Amendment to the Habitat Conservation Plan (Murray 1995a), and the Environmental Assessment (EA) (Service 1995a) for the proposed action; A Conservation Strategy for the Northern Spotted Owl prepared by the Interagency Scientific Committee (ISC Report) (Thomas et al. 1990); Recovery Plan for the Northern Spotted Owl-Draft (Owl Recovery Plan) (USDI 1992a); the Report of the Forest Ecosystem Management Assessment Team (FEMAT Report) (USDA et al. 1993); the Final Supplemental Environmental Impact Statement on Management of Habitat for Late Successional and Old-Growth Forests Related Species within the Range of the Northern Spotted Owl (FSEIS) (USDA and USDI 1994a); the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (President's Forest Plan) (USDA and USDI 1994b); the final rule designating the owl as a threatened species (USDI 1990a); the final rule designating critical habitat for the owl (USDI 1992b); the final rule listing the murrelet as a threatened species (USDI

1992c); the proposed rule designating critical habitat for the murrelet (USDI 1994); Forest Habitat Relationships of Marbled Murrelets in Western Washington (Hamer et al. 1994); the Pacific Seabird Group Methods for Surveying for Marbled Murrelets in Forests (Murrelet Survey Protocol) (Ralph et al. 1993, 1994); the Ecology and Conservation of the Marbled Murrelet (Ralph et al. 1995a); the Grizzly Bear Recovery Plan (Service 1993a); Recovery Plan for the Pacific Bald Eagle (Service 1986); the Northern Rocky Mountain Wolf Recovery Plan (Service 1987); The Gray Wolf: History, Present Status and Management Recommendations (Kaminski and Boss 1981); and information contained in our files. This biological/conference opinion was prepared by the Service's Olympia Field Office. The complete administrative record of this consultation is on file at that office.

A previous biological opinion (No. 1-3-93-FW-15) was rendered on September 24, 1993, in regard to the proposed issuance to Murray of an incidental take permit for the owl. At issue were the impacts that issuance of the permit to Murray would have on the owl and murrelet. In that biological opinion the Service concluded that the proposed action (1) was not likely to jeopardize the continued existence of the owl; and (2) would not adversely modify or destroy owl designated critical habitat. The Service also determined that impacts to the murrelet were not likely to adversely affect the murrelet because (1) occupancy of suitable habitat by murrelets on Murray ownership had not been verified; (2) no potential murrelet habitat on Murray lands would be harvested prior to completion of protocol surveys for occupancy and stands were determined to be unoccupied; and (3) issuance of an incidental take permit for murrelets was not authorized.

DESCRIPTION OF THE PROPOSED ACTION

Murray has applied to the Service for an amended permit under section 10(a)(1)(B) of the Act to authorize incidental take of all listed species that may occur on Murray's Mineral Tree Farm. Murray has also requested the Service and NMFS to enter into a consensual agreement to conserve currently unlisted fish and wildlife species which may be associated with habitats on their tree farm. Murray proposes to manage the Mineral Tree Farm pursuant to the HCP Amendment (Murray 1995a) and IA that were developed as part of their permit amendment application. The term of the proposed HCP Amendment, IA, and permit is 100 years.

The Mineral Tree Farm consists of 53,527 acres of commercial timber land in two contiguous blocks north and northeast of the town of Morton in eastern Lewis County, Washington. The tree farm is adjacent to and due east of the Mineral Block of the Mt. Baker-Snoqualmie National Forest. The entire tree farm is managed for commercial timber production, and is currently a mosaic of coniferous forest stands of varying ages. Most of the tree farm has been clearcut or partially harvested at least once since 1913. Approximately 1,144 acres are classified as old-growth, but only 479 acres have never been entered for logging and retain all or most of the old-growth characteristics described by Franklin et al. (1981). The remainder of the tree farm is selectively-harvested old-growth forest, second-growth forest, non-forested wetland, rock, stream, lake, and road. A complete description of the environmental setting including a map depicting Murray's Mineral Tree Farm, and adjacent Federal ownership, as well as the status of

abiotic and biotic resources in the HCP area, is presented in Section 4.0 of Murray's HCP Amendment (Murray 1995a).

The actions proposed in the HCP area under the HCP Amendment will be in addition to management activities and conservation measures that Murray committed to in the original owl HCP (Murray 1993), as mitigation for the issuance of the original incidental take permit for owls by the Service. The owl HCP was approved and the permit issued by the Service on September 24, 1993. The original owl HCP was developed to provide dispersal habitat in accordance with recommendations presented in the ISC Report (Thomas et al. 1990) and the Owl Recovery Plan (USDI 1992a) as mitigation for the incidental take of owls resulting from Murray's timber harvesting operations.

For purposes of consultation under section 7 of the Act, the "action area" is defined at 50 CFR 402 to mean "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Although the potential impacts to listed and other covered species are restricted to the HCP area, the effects of the proposed action on these species may extend beyond this area. For purposes of this consultation, the Service has defined the action area to include the HCP area, the adjacent Federal lands to the east and west of the HCP area on the Mt. Baker-Snoqualmie National Forest, and adjacent State and private lands to the north and south of the HCP area.

The objective of the HCP Amendment is to set forth a plan to manage the tree farm in a manner that maintains and enhances fish and wildlife habitat while permitting the continued harvest of commercial timber. Murray intends to harvest most of the remaining 2,834 acres of mature coniferous forest (>100 years old) over the next decade. Murray has proposed a variety of habitat conservation and protection measures to minimize and mitigate the impacts of future harvest activities on currently listed species, and species that may be listed in the future that may occur in habitats on their ownership. These measures include riparian reserves that average 100 feet on each side of major streams, and the retention of all, and enhancement of many, of the habitat types currently present on Murray's Mineral Tree Farm, including some of the remaining mature coniferous forest that occurs in the riparian reserves. Murray has developed species-specific protection measures to supplement the proposed habitat conservation measures. In addition, the HCP Amendment will complement Federal efforts under the President's Forest Plan (USDA and USDI 1994b) on adjacent Late-Successional Reserves (LSRs) in the Mt. Baker-Snoqualmie National Forest.

A complete description of conservation measures proposed to minimize and mitigate the impacts of Murray's harvest activities on listed species is provided in Section 5.0 of the HCP Amendment (Murray 1995a). An analysis of the impacts of the proposed plan is provided in the Environmental Assessment for this proposed action (Service 1995a). The measures included in Murray's HCP Amendment to minimize and mitigate incidental take of currently listed species and species that may be listed in the future are as follows:

1. Implement all conditions of the original owl HCP which includes creating owl dispersal habitat that will increase from an existing 11,412 acres to an estimated 23,233 acres by 2043, and average 23,000 acres for the last 50 years of the plan.

2. Conduct Watershed Analysis for all watershed administrative units (WAUs) in which Murray owns 10 percent or more of the land area, and implement watershed management/protection measures prescribed in the Watershed Analysis process.

3. Conduct no commercial timber harvest within an average of 100 feet and minimum 75 feet of all fish-bearing streams prior to the completion of Wastershed Analysis for each WAU.

4. Prior to Watershed Analysis, conduct no commercial timber harvest within an average of 50 feet and minimum of 25 feet of the lower 1,000 feet of Department of Natural Resources (DNR) Type 4 streams that contribute more than 20 percent of the flow to a Type 1, 2 or 3 stream.

5. Regardless of the outcome of Watershed Analysis, maintain no-harvest riparian habitat reserves with an average width of 100 feet and minimum width of 25 feet on each side of all Type 1, 2 and 3 streams.

6. Prior to Watershed Analysis, construct no roads within 100 feet of Type 1, 2, 3 or 4 streams.

7. Reserve at least 10 percent of the tree farm for growth and maintenance of late-successional coniferous forest for the 100-year term of the plan.

8. Protect lakes and non-forested wetlands by conducting no harvest or road construction within an average of 100 feet and minimum of 50 feet.

9. Leave a minimum of 4 green trees and 4 snags per acre of harvest at the time of even-aged harvest.

10. Protect up to 5 cave openings determined to be occupied by bats or the Larch Mountain salamander by retaining up to 1 acre of forest around each, and by building no roads and, where practicable, applying no herbicides or insecticides within 100 feet.

11. Protect talus fields of 1 acre or larger from ground-based skidding, road construction and rock quarrying, and buffer talus habitat with green tree patches extending up to 100 feet from the talus. Apply no herbicides or insecticides within 100 feet of talus fields.

12. Maintain locked gates on the tree farm to control public use of roads and forest habitats to minimize disturbance to wildlife, including active dens, nests and cave roosts.

13. Provide seasonal protection, in consultation with the Service, of up to 125 acres within 1,320-foot radius (~0.25 mile) of up to 4 known active nests of a northern goshawk (*Accipiter gentilis*), osprey (*Pandion haliaetus*), bald eagle or golden eagle (*Aquila chrysaetos*).

14. Provide long-term protection of the best 30 acres around a total of up 6 live trees or snags containing known occupied nests of the northern goshawk or osprey combined.

15. Protect eagles pursuant to the Bald and Golden Eagle Protection Act.

16. Provide seasonal protection from disturbance within 0.5 mile of known active dens of the grizzly bear, gray wolf and wolverine (*Gulo gulo luteus*), and within 0.25 mile of known active dens of the Pacific fisher (*Martes pennanti pacifica*).

Monitoring and reporting under the HCP Amendment will proceed as described in the original owl HCP (Murray 1993), which included tracking the amount and distribution of owl dispersal habitat. In addition, Murray will implement monitoring programs, described in detail in Section 7.0 of the HCP Amendment, for the following habitat and species: (1) fish habitat; (2) fish populations; (3) road and surface erosion; (4) amount and distribution of forest habitats on the tree farm; (5) breeding birds; (6) northern goshawk, eagles and osprey; and (7) amphibians. Reporting will be done annually, at 5-year intervals, or as determined by Watershed Analysis, depending on the type of monitoring program.

As specified in the IA, should any of the currently unlisted species subsequently become listed, Murray may request an amendment to the incidental take permit to include the species. If an amendment request is received, the Service and/or NMFS will reinitiate consultation under section 7 of the Act.

STATUS OF THE SPECIES/ENVIRONMENTAL BASELINE

The environmental baseline of the HCP area is described in Murray's original owl HCP and the HCP Amendment. Murray's timber management activities under the environmental baseline are conducted in accordance with Washington Forest Practices Rules and Regulations, except where minimization and mitigation measures provided in the original owl HCP have been implemented.

Federal lands to the west of the HCP area were designated as LSRs in the President's Forest Plan (USDA and USDI 1994b). Stands in this landscape are either currently in an old-growth condition or, if harvested in the recent past, will be allowed to mature into an old-growth condition. Federal lands immediately adjacent to the HCP area to the east were designated as matrix lands (USDA and USDI 1994b). Federal lands just east of the matrix were designated as LSRs. Matrix lands will be managed similar to private industrial timberlands following the standards and guidelines for matrix in the President's Forest Plan (USDA and USDI 1994b).

Northern Spotted Owl

A detailed account of the taxonomy, ecology, and reproductive characteristics of the owl is presented in the 1990 Status Review (USDI 1990b), the ISC Report (Thomas et al. 1990), the Owl Recovery Plan (USDI 1992a), the final rule designating the owl as a threatened species (USDI 1990a), and the final rule designating critical habitat for the owl (USDI 1992b).

The status of the owl on Murray Pacific lands as well as the condition of the tree farm was discussed in the original owl HCP (Murray 1993) and the biological opinion (No. 1-3-93-FW-15) rendered on issuance of the original incidental take permit for owls. Supporting documents for that action identified the loss of suitable nesting, roosting, foraging, and dispersal habitat as the primary cause associated with the decline of owl populations. Almost exclusively, these habitat losses were directly associated with timber harvest activities on public and private lands throughout the range of this subspecies. The habitat losses and degradation have led to a reduction of the species' numbers, detrimentally modified distribution, reduced fitness, reduced opportunity for survival of individual owls and the recovery of individual populations units across the range of the subspecies.

At the time of Murray's development of the original owl HCP, they had two active site centers on their ownership; one containing a pair of owls and the other containing a resident single. These owls represented less than one-tenth of one percent of the known pairs and resident singles within the range of this subspecies. Murray's owl HCP was developed to address the conservation of the owl in response to past and present land management activities that have degraded habitat conditions on Federal and private lands, as well as to obtain an incidental take permit for owls.

Murray was issued incidental take permit No. PRT-777837 for owls by the Service on September 24, 1993. As mitigation for the incidental take of owls, Murray agreed to implement a HCP that would increase owl dispersal habitat from 11,412 acres in 1993 to 23,233 acres by 2043 and maintain an average of 23,000 acres through 2093. This dispersal habitat is a recovery goal for the area that includes Murray's ownership identified in the Draft Recovery Plan for the owl. The original owl HCP provides for dispersal habitat, well distributed over the 54,610 acres of Murray's ownership, that will aid in dispersal of juvenile owls between Federal LSRs of the Mt. Baker-Snoqualmie National Forest to the west and east of Murray ownership (USDA and USDI 1994b). The biological opinion of the Service was that Murray's proposed action was not likely to jeopardize the continued existence of the owl. Designated critical habitat boundaries did not encompass Murray ownership and, therefore, their proposed action would not adversely modify or destroy designated owl critical habitat. Murray's management activities under the proposed action (HCP Amendment) will continue to implement the measures agreed to in the original owl HCP and, therefore, the condition of Murray's forested lands now and in the future will be such that all forest age classes will be represented across the landscape, approximately 42 percent of which will be owl dispersal habitat.

Marbled Murrelet

A detailed account of the taxonomy, ecology, and reproductive characteristics of the murrelet is presented in Marshall (1988), the final rule designating the murrelet as a threatened species (USDI 1992c), the proposed rule to designate critical habitat for the murrelet (USDI 1994), the biological opinion for Alternative 9 of the FSEIS (USDA and USDI 1994a), and in Ralph et al. (1995a).

The murrelet population in Washington, Oregon, and California was federally listed as threatened on October 1, 1992 (USDI 1992c). The murrelet was determined to be threatened due to loss and modification of nesting habitat (older forests) primarily due to commercial timber harvesting. The murrelet is also threatened from mortality associated with ongoing gill-net fishing operations off the Washington coast, and the effects of oil spills (USDI 1992c). Historically, nesting habitat for the murrelet was widely dispersed, particularly in the wetter portions of its range in Oregon, Washington, and California. This habitat was generally found in very large, contiguous blocks of old forest. Currently, the threatened population of murrelets nests in most of the major types of coniferous forest in the western portions of Washington, Oregon, and north-central California. Current and historic murrelet habitat loss is generally attributed to timber harvest and land conversion practices, although natural disturbances such as forest fires have caused losses as well.

Within habitat areas essential for murrelet nesting, the Service has focused on the following primary constituent elements: (1) individual trees with potential nesting platforms; (2) forest stands surrounding potential nest trees, including contiguous forest with similar average height and canopy closure; (3) forest stands with high crown cover and sufficient height to contribute to a forest landscape with decreased fragmentation; and (4) forest stands within the potential flight distance of murrelets from the marine environment where the birds feed. These primary constitutent elements are essential to provide nesting habitat for the murrelet.

Individual tree attributes that provide conditions suitable for nesting include branches at least 13 cm (5 inches) in diameter, with deformities, mistletoe infections, witches brooms, or other structures providing a platform for nesting. Often nest platforms are covered with moss or duff which create a nest substrate for the murrelet (Hamer et al. 1994). All known tree nests in North America have been located in old-growth trees that were greater than 81 cm (32 inches) diameter at breast height (dbh) (Hamer et al. 1994). Other stand features important to nesting murrelets are sufficient canopy closure that provides protection from predation and weather, and stands with internal structure to minimize the risk of predation at the nest. These structures are typically found in old-growth and mature stands, but may be found in a variety of stand types including younger stands containing remnant large trees.

Hamer et al. (1994) developed a model to predict the probability of occupancy for forest stands. The classification accuracy of occupied stands was 67.2 percent. The probability of murrelet occupancy of a stand was positively related to the total number of potential nest platforms, percent moss coverage on the limbs of dominant trees, percent slope, stem density of dominant

trees, and the mean dbh of western hemlock (*Tsuga heterophylla*). The number of platforms available in a stand, and the cover of moss on tree limbs, were the most important variables used to predict occupancy. Stands with a higher probability of occupancy by murrelets in western Washington were best characterized as being lower in elevation, and having a larger number of potential nest platforms, higher percent cover of moss on tree limbs, lower lichen cover on tree limbs, steeper slopes, lower canopy closures than a typical closed canopy stand and a greater stem density of dominant trees. Occupied stands typically had a higher percent composition of low elevation tree species, and a larger mean dbh of low elevation conifers than stands with a low probability of murrelet occupancy. Many murrelet-occupied stands were infected with dwarf mistletoe (*Arceuthobium spp*).

Beak Consultants (Beak) (1994a) conducted a murrelet habitat assessment on Murray ownership to determine the amount and location of potentially suitable murrelet habitat. Beak used the definition of suitable murrelet habitat in Cummins et al. (1993) which states that stands that are to be considered suitable habitat for murrelets have all the following characteristics: (1) at least 8 trees/acre that are ≥32 inches in dbh; (2) 40 percent of the trees ≥32 inches dbh should be Douglas-fir (*Pseudotsuga menziesii*), western hemlock, Sitka spruce (*Picea sitchensis*) or western red cedar (*Thuja plicata*); and (3) at least 2 nesting platforms/acre, greater than 50 feet above the ground. The assessment was conducted to determine the average number of trees per acre ≥32 inches dbh and the average number of platforms per acre at least 50 feet above the ground, since all stands were dominated with one of the required tree species. Approximately 1,039 acres of forest were considered to be potentially suitable habitat for murrelets (Murray 1995a). A General Protocol Survey (Ralph and Nelson 1992) was conducted in 1992, and Intensive Protocol Surveys were conducted in 1993 and 1994 (Ralph et al. 1993, 1994). The 1992 survey was modified as described in the HCP Amendment (Murray 1995a). Murray submitted reports of murrelet surveys for 1992, 1993 and 1994 to the Service in January 1995 (Beak 1992, 1993, 1994b). The 1992 survey reported murrelet detections in three of four survey areas on at least one of the visits. The 1993 survey reported murrelet detections on two occasions in separate areas of the Connelly Creek drainage. The 1994 survey reported one detection of presence, again in the Connelly Creek drainage. In 1994, additional survey effort was made to determine occupancy at sites where murrelet presence had been detected in previous years. At sites where murrelet presence had been detected, either a second observer was present during the final two visits to those areas or at least one additional visit was conducted to the area. No behaviors associated with occupancy were observed on the tree farm. Based on the information provided in these reports, the Service believes the surveys conducted in 1993 and 1994 are acceptable (Service 1995b). Land that Murray recently acquired through a land exchange with the DNR and the U. S. Forest Service (USFS) has been assessed for potentially suitable murrelet habitat and surveyed for presence in 1994 (Beak 1995). The total acreage of potentially suitable murrelet habitat was 58 acres located at three sites. Initial 1994 surveys of the 3 new sites indicated that murrelets were not present.

Critical habitat has been proposed for the murrelet (USDI 1994). The proposed critical habitat units roughly correspond to USFS LSRs which occur within the range of the species in

Washington. Proposed murrelet critical habitat has been designated on LSRs immediately west of and adjacent to Murray ownership but the designation does not include Murray ownership.

Bald Eagle

A detailed account of the taxonomy, ecology, and reproductive characteristics of the bald eagle is presented in the Pacific Bald Eagle Recovery Plan (Service 1986), and the proposed rule to reclassify the bald eagle from endangered to threatened in most of the lower 48 states (USDI 1994).

The bald eagle is listed as endangered in the lower 48 states except for 5 states, including Washington, where it is listed as threatened. The Federal listing, which occurred on February 14, 1978 (USDI 1978a), was a result of a population decline in the lower 48 states which was largely attributed to the wide-spread use of DDT and other organochlorine compounds. DDT was discovered to accumulate in individual bald eagles after ingesting contaminated food which eventually impaired calcium release for egg shell formation, thus inducing thin shells and reproductive failure. In the 16 years since it was listed, the bald eagle population has improved nationwide as a direct result of the ban of DDT and other persistent organochlorines and from recovery efforts. As a result of the improved bald eagle population, the Service has proposed to reclassify the bald eagle from endangered to threatened in the lower 48 states (USDI 1994). The bald eagle would remain threatened in the five states, including Washington, where it is currently listed as threatened. Recovery plans for the bald eagle were first approved in the early 1980's. The Pacific Bald Eagle Recovery Plan for the Pacific Recovery Region, which includes Washington State, was completed in 1986 (Service 1986). Threatened recovery goals have since been met.

The Washington Department of Fish and Wildlife (WDFW) maintains a bald eagle database of bald eagle nest locations, winter concentration areas and communal night roosts. WDFW conducts bald eagle nest surveys annually. There are no bald eagle nests or winter roost sites known to exist on Murray ownership. Since the major streams flowing from Murray ownership are dammed below their ownership, no anadramous fish stocks inhabit the streams on Murray property above the dams. However, salmonid stocks have been introduced into streams above the dams on Murray ownership providing a prey source in the area for eagles.

Grizzly Bear

A detailed account of the taxonomy, ecology, and reproductive characteristics of the grizzly bear is presented in the Grizzly Bear Compendium (USDI and USDA 1987) and the Grizzly Bear Recovery Plan (Service 1993a).

The grizzly bear was federally listed as threatened on July 28, 1975 (USDI 1975). Grizzly bear populations in the lower 48 states had receded from estimates of over 50,000 to less than 1,000 grizzly bears between 1800 and 1975. Habitat loss, and direct and indirect human-caused

mortality is related to the decline in numbers. Current distribution is reduced to less than 2 percent of its former range south of Canada in 5, and perhaps 6, small populations with an estimated total population of 800 to 1,000 bears. The five known populations are confined to five ecosystems, one of which is the North Cascades of Washington.

A Grizzly Bear Recovery Plan was approved on January 29, 1982, and a revised plan was completed on September 10, 1993 (Service 1993a). The Grizzly Bear Recovery Plan established six recovery zones with the overall objective to delist each of the remaining populations by population as they achieve the recovery targets. The North Cascades Recovery Zone extends from the Canadian border in north central Washington south to Interstate 90. This recovery zone is contiguous to an area of low grizzly bear density in Canada. Verified grizzly tracks have been documented in the north Cascades, and a 6-year study indicated that sufficient amounts of quality habitat exists to sustain a viable population of grizzly bears in the North Cascades (J. Haas, pers. comm.). For additional information concerning the status and biology of the species, refer to the Grizzly Bear Compendium (USDI and USDA 1987).

Murray's ownership covered in the HCP Amendment may contain potential grizzly bear habitat because the landscape is in various stages of vegetative growth, the road system is closed to public access, and the HCP area is adjacent to large tracts of Federal land designated as LSRs. However, the HCP area is greater than 60 miles southwest of the southern boundary of the North Cascades Recovery Zone. No grizzly bears or their den sites are known to exist on Murray ownership, however, no surveys for grizzly bear occupancy or habitat availability have been completed within the HCP planning area. Grizzly bear tracks were verified in 1993 near Kapowsin, Washington, approximately 25 miles north of the HCP area (J. Haas, pers. comm.).

Gray Wolf

A detailed account of the taxonomy, ecology, and reproductive characteristics of the gray wolf is presented in Northern Rocky Mountain Wolf Recovery Plan (Service 1987), and The Gray Wolf: History, Present Status and Management Recommendations (Kaminski and Boss 1981).

The gray wolf was federally listed as endangered in the 48 conterminous states, except Minnesota where it was listed as threatened on March 9, 1978 (USDI 1978b). The listing was based on a nationwide population decline as a result of land development, loss of habitat, poisoning, trapping, and hunting. Current populations of the gray wolf in the west are confined to small areas in central Idaho and northwest Montana. A Northern Rocky Mountain Wolf Recovery Plan was completed on August 3, 1987 (Service 1987). The goal of the recovery plan was to re-establish the gray wolf in portions of its former range in the Northern Rocky Mountains. There is no recovery plan for the wolf in the Pacific Northwest states. However, the Service is currently involved in the development of a range-wide wolf recovery strategy. Wolf management guidelines have been developed to serve in the interim..

Murray's ownership contains an ungulate prey base and, therefore, it could be considered as potential wolf habitat. The landscape is in various stages of vegetative growth, the road system is closed to public access, and the HCP area is adjacent to large tracts of Federal land designated as LSRs. Wolf pack activity and reproduction, as well as the presence of several lone wolves, have been documented in Washington. Most confirmed wolf activity in recent years has been documented north of Interstate 90. Trapping and monitoring efforts south of Interstate 90 in the Naches River watershed 40 to 50 miles northeast of the HCP area were conducted between 1991 and 1993, in response to several wolf sighting and vocalization reports in the area. There were no confirmations of wolf presence as a result of that effort but wolf sightings and vocalizations continue to be reported (J. Haas, pers. comm.). No surveys of wolf occupancy or habitat availability have been completed within the HCP planning area. However, no wolves, or den and rendezvous sites are known to occur on Murray's ownership.

Other Fish and Wildlife Species

Accounts of the status and habitat associations of currently unlisted fish and wildlife species addressed in the HCP Amendment are presented in the EA for the proposed action, and the HCP Amendment. These documents are hereby incorporated by reference.

The environmental baseline is presented in Attachment 1 (Table 9-2 from the HCP Amendment) which provides the current (1994) status and a projection (through 2094) under the original owl HCP, of the habitat types and habitat features that occur on the tree farm. Some fish and wildlife species which may utilize these habitat types/features are presented in Attachment 2 (Appendix 2 from the HCP Amendment).

EFFECTS OF THE PROPOSED ACTION

Northern Spotted Owl

Murray was issued an incidental take permit for owls on September 24, 1993, based on the management activities and conservation measures proposed in their original owl HCP (Murray 1993). Murray's minimization and mitigation measures to reduce the impacts to the owl are described in detail in the original owl HCP and will continue unchanged under the HCP Amendment. The effects of their action are addressed in the Environmental Assessment for the Proposed Issuance of a Permit to Allow the Incidental Take of the Northern Spotted Owl (Service 1993b). The biological opinion rendered on this action determined that the original owl HCP and issuance of the incidental take permit was not likely to jeopardize the continued existence of the owl (Service 1993c). Implementation of the HCP Amendment will not result in different effects on owls than those previously discussed in the biological opinion for the original permit.

Marbled Murrelet

Potentially suitable murrelet habitat on Murray ownership was assessed in 1993 (Beak 1994a) according to criteria established by the murrelet Scientific Advisory Group (SAG) to the Washington Forest Practices Board (Cummins et al. 1993). All stands assessed were dominated by Douglas-fir, western hemlock or western red cedar which satisfied one of the three SAG criteria. A total of 1,492 acres of potentially suitable murrelet habitat were delineated for the analysis. Seventeen stands, representing 650 acres, met all the criteria, and 14 stands, representing 385 acres, met two of the three criteria, for a total of 1,035 acres of potentially suitable murrelet habitat on Murray ownership. Stands meeting only the tree species criterion were not considered to be potentially suitable murrelet habitat.

In a letter to prospective murrelet surveyors (Ralph et al. 1995b), the Pacific Seabird Group (PSG) Inland Protocol Subcommittee recommended using the 1994 Murrelet Survey Protocol to survey for murrelets in conjunction with additional information presented in the letter. The letter contains a discussion of a statistical analysis conducted on the results of past murrelet surveys to verify the number of survey visits required to determine probable presence and occupancy of murrelets in a stand. The results show the relationship between the number of survey visits conducted at a site to the probability of observing the indicated behavior, given that the behavior exists at the site. Results of the analysis show that there is a 97 percent probability of observing presence of murrelets in a stand with 4 survey visits. The probability that occupancy behavior will be observed is 90 percent with 8 survey visits and 95 percent with 10 survey visits. The subcommittee recommends using the 95 percent probability level for survey effort requirements to determine presence and occupancy at a site; 4 visits for presence and 10 visits for occupancy. Although 4 site visits has a high probability of determining presence, the survey protocol recommends conducting murrelet surveys for 2 consecutive years to account for year to year variation in reproductive behavior. Currently, the subcommittee is considering if in each of 2 or

more consecutive years, 10 completed surveys for murrelet occupancy should be done, or if 10 should be the total number of surveys over a period of years.

Intensive surveys of potentially suitable murrelet habitat were conducted in 1993 and 1994 according to the Murrelt Survey Protocol (Ralph et al. 1993, 1994). Presence was detected in the Connelly Creek drainage in 1993 and 1994. Presence was not detected at any other survey site in the HCP area in 1993 or in 1994. At least 8 visits were conducted in 1993 and 1994 to determine murrelet presence in all potentially suitable murrelet habitat in the HCP area, except for 3 new areas acquired through a land exchange, which were surveyed for presence only in 1994. Including a modified General Survey conducted in 1992, six sites in the HCP area had detections for murrelet presence. In 1994, these sites were surveyed for murrelet occupancy by either having a second observer present during the final two visits to those sites, or by conducting at least one additional visit to the site. When two observers were present, one observer was located in a position to maximize visibility over the canopy while the other was in position in the stand. Observers were in radio contact. This additional survey effort was nearly the same level of effort recommended by the PSG subcommittee in 1995. The murrelet surveys in the HCP area indicate that there is no known occupancy by murrelets in stands on Murray ownership

The three new potentially suitable murrelet habitat sites, total 58 acres, and one additional stand which was re-assessed and determined to have 45.5 acres of potentially suitable murrelet habitat, have also been determined to have no murrelet presence. They have been surveyed to protocol for only 1 year and require an additional survey, which is currently underway. The total amount of potentially suitable murrelet habitat surveyed for one year is 103.5 acres. Two visits to each site have been conducted in 1995 and no presence by murrelets has been detected. The three sites acquired through land exchange are isolated; each of the sites is greater than 2 miles from any other potential murrelet habitat. Two of the three sites consist of 2 or 3 patches of habitat separated by 250 to 600 feet of non-habitat. Thus, each patch is considered a stand but all patches combined at one site are not considered a contiguous stand as defined in the Murrelet Survey Protocol (Ralph et al. 1994). The exchange land sites are 39 to 44 miles from saltwater, 3 to 9 miles from the only detected murrelet presence in the Connelly Creek drainage, and >50 percent of the surrounding habitat consists of forest less than 70 years old. The 45.5-acre site is 9 miles from the Connelly Creek drainage and 46 miles from saltwater. It is near other stands of potentially suitable murrelet habitat but considered a separate stand. The nearby stands have been surveyed to protocol for 2 years and no presence has been detected. Given the size, location, and survey history of these stands and nearby stands of potentially suitable murrelet habitat, the likelihood of occupancy by murrelets in these stands is highly unlikely. However, if occupancy should be determined in 1995 at these sites, Murray has agreed by letter (Murray 1995b) to consult with the Service to determine if additional minimization or mitigation measures are necessary beyond those already provided under the terms of the HCP Amendment and the IA.

Summary of Effects on the Murrelet

The potentially suitable murrelet habitat in the HCP area is limited in quantity, and the quality is relatively low due to the effects of fragmentation associated with previous timber harvest practices. Under the proposed HCP Amendment, Murray will harvest all of their old forest outside of the riparian and upland reserves, which were established by Watershed Analysis, the proposed conservation measures and forest practices. This will result in a reduction of approximately 800 acres of potentially suitable but unoccupied murrelet habitat, most of which will be harvested in the first 10 years of the HCP Amendment. However, as the riparian and upland reserve trees mature over the term of the permit, they likely will develop the nesting structures required by murrelets. Where these potential nest trees are in interior forest such as the riparian reserves with adjacent mature stands, they could be occupied by murrelets. Implementation of the HCP Amendment will create owl dispersal habitat distributed throughout the landscape in the HCP area. These stands will complement potential suitable murrelet habitat in the riparian reserves by creating interior forest throughout the landscape. It is suspected that murrelets have high site fidelity. If this is true, then use of the riparian reserve trees may not occur. However, if colonization should occur and murrelets do occupy potential nest trees in the riparian reserves, the structures themselves will be protected and surrounding habitat will be available until such time as the adjacent stands creating the interior forest are harvested. The HCP Amendment ensures that there will be interior forest across the landscape, especially in the last 50 years of the term of the permit. Since there is currently no occupancy of potential murrelet habitat, the Service believes that the proposed action will not directly affect the murrelet. Since HCP Amendment implementation may provide some suitable murrelet habitat, the anticipated adverse effect of the HCP Amendment on murrelets is expected to be minimal.

Bald Eagle

Bald eagle nests in the Pacific recovery area are usually located in uneven-aged stands with old-growth components, and are near water bodies which support an adequate food supply (Service 1986). Most nests in the Pacific Northwest are predominantly coniferous stands. Nest trees usually provide an unobstructed view of an associated water body and are often in prominent locations on the topography. The tree selected for nesting is characteristically one of the largest in the stand or is at least co-dominant with the overstory. Bald eagles are particularly intolerant of human disturbance during the breeding season. During winter, eagles in the Pacific recovery area are primarily associated with open water or major streams containing anadramous fish. Most eagles wintering in Washington are found on river systems in the Puget Trough north of Murray ownership, on the Olympic Peninsula, and in the Columbia Basin to the south (Service 1986). Murray ownership does not contain the type of habitat where eagles would be expected to winter because streams on their property have no anadramous fish stocks, there is no non-recreational open water, and there are no nests.

Murray will establish, on average, 100-foot no harvest reserves along each side of Type 1, 2, and 3 streams and non-forested wetlands. Type 4 streams will have on average 50-foot no harvest

reserves at least 1000 feet up stream from the connecting stream below. These reserves will protect established as well as potential nest trees and winter roost sites in the riparian zones of the major drainages and wetlands in the HCP area. The reserves, established through Watershed Analysis, will also protect and enhance habitat of prey species, such as introduced salmonid stocks. Additional measures that would reduce the effect of Murrays timber management activities on bald eagles include seasonal protection from disturbance within a 1/4 mile distance from active nests in the riparian reserves and upland areas, protection of all eagle nests whether occupied or not, and restricting public access by maintaining locked gates at road entries to the HCP area. There are no known bald eagle nests or winter roost sites currently on Murray's ownership, however, if bald eagles should establish nests or winter roosts in the HCP area, provisions of the HCP Amendment to minimize and mitigate impacts would be adequate to protect bald eagles and potential foraging opportunities, as well as to prevent human disturbance.

Grizzly Bear

Grizzly bears require large areas containing a diversity of habitats and minimal human disturbance. Timber harvest practices in the Pacific Northwest maintain a landscape of varied habitats that could benefit a generalist feeder like the grizzly bear. There have been no recorded sightings of the grizzly bear in Murray's HCP area. While occurrence has not been documented, suitable habitat does exist. Murray's riparian reserves along streams, lakes, and wetlands would protect areas that could potentially be used as grizzly bear den sites, as well as support a greater prey base, and provide more foraging opportunities and security cover. The Grizzly Bear Recovery Plan recognizes road management as the single most powerful tool to manage and maintain suitable grizzly bear habitat (Service 1993a). Under the HCP Amendment, Murray will restrict public access to the HCP area by maintaining locked gates on roads entering the HCP area, thereby providing security for grizzly bears. Implementation of the HCP Amendment will provide seasonal protection from disturbance within 0.5 mile of a known active grizzly bear den should they occur in the HCP area. As a result of the HCP Amendment mitigation and minimization measures, Murray's timber management activities are not anticipated to have an overall adverse effect on grizzly bears.

Gray Wolf

Gray wolves require large areas containing a diversity of habitats, healthy ungulate populations and minimal human disturbance. There have been no recorded sightings of the gray wolf on Murray's HCP area. While occurrence has not been documented, suitable habitat does exist. Timber harvest activities in the Pacific Northwest generally maintain a landscape of varied habitats that could benefit a wide-ranging habitat generalist like the gray wolf. Murray's riparian reserves along streams, lakes and wetlands would protect areas that could potentially be used as gray wolf den and rendezvous sites, and provide more foraging opportunities and security cover. The dispersal habitat landscape and riparian reserves would likely benefit wolves by increasing the abundance of ungulates and small mammals due to an increase in riparian plant foods and edge, and decreasing distance to cover. Under the HCP Amendment, Murray will restrict public access

to the HCP area by maintaining locked gates on roads entering the HCP area, thereby providing security for the gray wolf. Implementation of the HCP Amendment will provide seasonal protection from disturbance within 0.5 mile of a known active gray wolf den should any occur in the HCP area. Due to measures in the HCP Amendment to minimize and mitigate impacts to wolves, Murray's timber management activities are not anticipated to have an overall adverse effect on gray wolves.

Summary of Effects on the Bald Eagle, Grizzly Bear, and Gray Wolf

With the HCP area in proximity to Federal LSRs, implementation of the HCP Amendment may have a positive net effect on bald eagles, grizzly bears and gray wolves in the future. Under the terms of the original HCP and the proposed HCP Amendment, the HCP area will become a landscape of a variety of forest age classes, with owl dispersal habitat distributed throughout. Forested riparian areas will be on average 200 feet wide along major streams. These forested and riparian habitats will be contiguous with, and add habitat acreage to, stands of older forests on adjacent Federal LSRs, as well as adjacent DNR dispersal habitat. The habitats provided on Murray ownership will increase security cover and be available for nesting, denning, and foraging opportunities to support such species as the bald eagle, grizzly bear and gray wolf that may disperse from adjacent national forest land. Disturbance will be minimal because public access to the HCP area will be restricted. Overall, the cumulative effects of the HCP Amendment minimization and mitigation measures, and actions on adjacent State and Federal timberlands should have a net positive effect on these species.

Other Fish and Wildlife Species

Other fish and wildlife species may be affected by the proposed action. An analysis of the effects of this proposed action on these species is presented in the HCP Amendment and the EA which are incorporated by reference. The Service and NMFS concur with this effects analysis. The other, currently unlisted, fish and wildlife species are addressed in the HCP Amendment in two categories: 1) those species identified as Federal candidates for listing or identified by the WDFW as having special status; or 2) other fish and wildlife species that may be associated with the habitat types/features on the tree farm.

Under the HCP Amendment, Murray is proposing measures to minimize and mitigate for impacts to currently unlisted species that will change the amount and/or quality of habitat types on the tree farm. In addition, Murray is proposing species-specific conservation measures designed to benefit certain species with special habitat requirements (e.g., species requiring talus slopes and caves). Attachment 3 (Table 9-4 from the HCP Amendment) lists species with special State or Federal status, their chance of occurrence within the HCP Amendment plan area, and the anticipated benefits of the HCP Amendment to the species. In addition, for these special-status species, and other species which may occur on Murray's tree farm, Attachment 1 presents characteristics of habitat types/features that occur on the tree farm under the environmental baseline and under the HCP Amendment.

As a result of the HCP Amendment, fish and wildlife habitat types that occur on the tree farm would either not change significantly, or would be enhanced when compared to the environmental baseline (Attachment 1). Some habitat types such as mature riparian forest would be managed to increase in both quantity and quality over the term of the HCP Amendment. By conserving all habitat types which occur on the tree farm, the Service and NMFS believe that the HCP Amendment will provide adequate protection to all species likely to use those habitat types now and in the future. The habitat management measures combined with the species-specific conservation measures will minimize and mitigate to the maximum extent practicable the impacts to these species associated with commercial timber production under the HCP Amendment.

The current status of other unlisted fish and wildlife species is not likely to change on private lands within the action area because current timber management activities are likely to continue there. For this reason, the Service does not anticipate any additional effects to these species within the action area as a result of the proposed action.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in this biological and conference opinion. Future Federal actions that are unrelated to the proposed action are not considered cumulative to the proposed action because they require separate consultation pursuant to section 7 of the Act.

Murray's HCP area is bordered primarily by private industrial timberlands to the south, and by State and private industrial timberlands to the north. Mt. Baker-Snoqualmie National Forest borders Murray ownership on the east and west. State and private industrial timberlands are managed for commercial timber production much like Murray's HCP area. The private industrial timberlands can be expected to continue to be managed for early successional forests with a 40 to 60-year rotation age. It is reasonable to assume that some of this land will be converted for agricultural purposes and for development.

The Act's section 9 take prohibitions apply to these adjacent private and State lands, therefore, landowners who want authorization for incidental take of listed species in the future may apply for permits pursuant to section 10 of the Act. In these cases, a Federal nexus will exist and effects of the action will be analyzed in accordance with future consultations under section 7 of the Act. Adjacent landowners may also request agreements with the Service or NMFS with respect to unlisted species similar to the request by Murray. Such agreements would also be subject to consultation under section 7 of the Act.

The majority of private industrial forest land adjacent to the HCP area is used for timber production, and very little owl and murrelet habitat remains on these lands. Although harvest of occupied owl and murrelet habitat on private timberlands could occur, it is assumed private landowners will survey for occupancy and, if occupied, they will not harvest these sites until such

time as they coordinate with the Service and/or develop a habitat conservation plan under section 10 of the Act. The cumulative effect to owl and murrelets in those cases where private landowners harvest suitable owl and murrelet habitat without conducting surveys is expected to be minor because very little owl and murrelet habitat remains in the HCP area and on adjacent lands, and occupied sites are not likely to be harvested.

Unless additional HCPs are developed with the private industrial landowners, it is likely that timber harvest activity on these timberlands will adhere to the basic requirements of Washington Forest Practices Rules and Regulations (WFP). These requirements which include provisions for establishing riparian management zones, and retention of snags and green trees are not adequate to provide habitat for any of the listed species analyzed in this biological opinion, except for the bald eagle. Riparian management zones for most Type 1, 2, and 3 streams are 50 to 75 feet wide. However, these may be managed to extract the timber leaving only 75 to 100 trees per every 1000 feet along a stream. Bald eagle nest trees may be protected in these riparian management zones. Some protection is afforded to the bald eagle, grizzly bear, and gray wolf by the WFP Regulations to maintain minimal distances in which timber harvest activity may occur from an active bald eagle nest, and active grizzly bear or gray wolf den sites to protect these species from disturbance. Bears and wolves are habitat generalists that may benefit from private landowner's forest practices if ungulate populations are supported. However, the riparian zones required by WFP Regulations are likely not wide enough to provide adequate security cover. For example, security areas should provide cover to hide 90 percent of a grizzly bear at 200 feet, and be a minimum of 4 sight distances across (600 to 800 ft) (USDI and USDA 1987). In addition, unless most private landowners restrict public access to their ownership, adequate protection from disturbance on roads will not be provided for bears and wolves. The amount and availability of diverse, secure habitat on private industrial timberlands adjacent to the HCP area is minimal. As a result, grizzly bears and wolves are not likely to inhabit these lands in the future.

The current status of other unlisted fish and wildlife species is not likely to change on private lands within the action area because current timber management activities are likely to continue as they have in the recent past. Therefore, the Service and NMFS do not anticipate any additional effects to these species within the action area as a result of the proposed action.

CONCLUSION

After reviewing the current status of the owl, murrelet, bald eagle, grizzly bear, gray wolf, and currently unlisted species, the environmental baseline for the action area, the effects of the proposed timber harvest associated with the HCP Amendment and the cumulative effects, it is the Service's biological and conference opinion that the proposed timber harvest associated with the HCP Amendment, issuance of the amended incidental take permit, and execution of the IA, are not likely to jeopardize the continued existence of the owl, murrelet, bald eagle, grizzly bear, gray wolf or the currently unlisted species. Should any of the currently unlisted species subsequently be listed under the Act, and Murray requests that they be added to the incidental take permit, the Service and/or NMFS will reinitiate section 7 consultation for those species for that proposed

action. Critical habitat for the owl has been designated and critical habitat for the murrelet has been proposed, however, actions under the HCP Amendment do not affect those areas, and no destruction or adverse modification of that critical habitat is anticipated. No critical habitat has been designated for the bald eagle, grizzly bear, and gray wolf; therefore, none will be affected.

INCIDENTAL TAKE

Section 9 of the Act, prohibits taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

This incidental take statement applies only to listed species. Should any of the currently unlisted species subsequently become listed, and Murray requests that they be added to the permit, formal consultation under section 7 of the Act will be reinitiated, at which time a definitive incidental take statement would be issued for those species, provided the proposed action is in compliance with section 7(a)(2) of the Act.

The reasonable and prudent measures and terms and conditions described below are non-discretionary. Failure to comply with these terms and conditions may cause the protective coverage of section 7(o)(2) to lapse.

Amount and Extent of Take

Northern Spotted Owl

The Service anticipates take of owls will remain unchanged under issuance of an incidental take permit associated with the HCP Amendment from that anticipated under the original owl incidental take permit that was issued by the Service on September 24, 1993. The biological opinion (No. 1-3-93-FW-15) rendered by the Service for issuance of the original owl permit describes in detail the extent of take of spotted owls. Incidental take of owls is expected to be in the form of harm or harassment.

Marbled Murrelet

There is potentially suitable murrelet habitat in the HCP area. Protocol surveys of Murray ownership have determined presence but no occupancy by murrelets to date. Approximately 800 acres of the 1,091 acres identified as potentially suitable murrelet nesting habitat would be harvested. The amended permit would authorize incidental take of all murrelets associated with the 800 acres to be harvested. However, it is expected that no murrelets will be taken by harvesting the 800 acres of potentially suitable habitat because an acceptable number of murrelet surveys have been conducted on Murray ownership, and they have resulted in no occupancy by murrelets. If murrelets should occupy potential murrelet habitat in the riparian reserves in the future, incidental take may occur as a result of timber harvest in stands adjacent to the reserves. The incidental take is expected to be in the form of harm or harassment.

Bald Eagle

There are no bald eagle nests or winter concentration sites in the HCP area. No incidental take is anticipated at this time as a result of this action. If bald eagles should occur in the HCP area in the future, it is likely that they will occur in the riparian reserves. Incidental take of bald eagles may occur in the future as stands adjacent to the riparian reserves or near the upland nest sites are harvested. However, whether bald eagle nests occur in the riparian reserves or in upland areas, all eagle nest trees or snags will be protected, and provisions have been made to provide long-term and seasonal protection of bald eagles. The incidental take of bald eagles is expected to be in the form of harm or harassment.

Grizzly Bear

There no known grizzly bears or their den sites in the HCP area. No incidental take is anticipated at this time as a result of this action. If grizzly bears should occur in the HCP area in the future, incidental take may occur during normal timber harvesting activities. However, the minimization and mitigation measures of the HCP Amendment should reduce the likelihood of incidental take. The incidental take of grizzly bears is expected to be in the form of harm or harassment.

Gray Wolf

There no known gray wolves, or their den and rendezvous sites in the HCP area. No incidental take is anticipated at this time as a result of this action. If gray wolves should occur in the HCP area in the future, incidental take may occur during normal timber harvesting activities. However, the minimization and mitigation measures of the HCP Amendment should reduce the likelihood of incidental take. The incidental take is expected to be in the form of harm or harassment.

Effect of the Take

Effect of the Take

As analyzed above, the Service has determined that this level of anticipated take is not likely to result in jeopardy to any of the above species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize take of the owl, murrelet, bald eagle, grizzly bear or gray wolf:

> Any incidental take of the owl, murrelet, bald eagle, grizzly bear or gray wolf must comply with all of the terms and conditions of the incidental take permit proposed to be issued under section 10(a) of the Act and its supporting HCP Amendment and IA.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are non-discretionary.

> An incidental take permit, as evaluated in this biological opinion, must be issued by the Service, and must include provisions for disposition of dead or injured owls, murrelets, bald eagles, grizzly bears and gray wolves.
>
> The HCP Amendment and IA for the incidental take permit must be approved by the Service.

While the incidental take statement provided in this consultation satisfies the requirements of the Act, it does not constitute an exemption from the prohibitions of take of listed migratory birds and the bald eagle under the provisions of the Migratory Bird Treaty Act of 1918, and the Bald Eagle Protection Act of 1940.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the following conservation measures be implemented:

The Service should provide technical assistance to Murray throughout the term of the permit.

The Service should be prepared to provide technical advice on monitoring and other biological issues associated with implementation of the HCP Amendment.

REINITIATION NOTICE

This concludes formal consultation on the proposed issuance of an incidental take permit to Murray Pacific. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions concerning this biological/conference opinion, please contact Craig Hansen of the Service's Olympia Field Office at (360) 534-9330.

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Table 9-2. Comparison of existing (1994) and projected habitat types and features in 2094 resulting from implementation of the original spotted owl HCP and the proposed HCP Amendment.

	ACRES OF HABITAT		
HABITAT TYPE OR FEATURE	**1994**	**2094 UNDER ORIGINAL HCP**	**2094 UNDER HCP AMENDMENT**
Conifer Forest >250 years old	1,144	302	494
Conifer Forest 101-250 years old	1,690	2,105	4,406
Conifer Forest 51-100 years old	3,187	1,064	906
Conifer Forest 26-50 years old	16,384	20,595	19,729
Conifer Saplings 11-25 years old	14,150	15,455	14,474
Conifer Seedlings 0-10 years old	11,695	9,415	8,930
Hardwood Forest	584	69	75
Mixed Hardwood/Conifer Forest	177	6	7
Riparian Forest >100 years old	142	1,052	3,197
Interior Forest	5,336	10,245	10,365
Forest Edge	4,410	6,900	7,900
Non-forested Wetlands	319	319	319 (with increased buffers)
Talus Fields	unknown	No specific protection	Protection of all talus fields >1 acre
Caves	unknown	No specific protection	Protection of up to 5 cave openings
Aquatic (Stream, Lake, Pond)	197	197	197 (with increased buffers)
Snags and Logs	unknown	2 green trees, 3 snags/acre	4 green trees, 4 snags/acre

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ATTACHMENT 2

Appendix A. Habitat types and features to be maintained and/or enhanced under the HCP Amendment, and animal species that could utilize them (B = breeding, F = feeding, R = resting).

	Conifer Forest > 250 years old	Conifer Forest 101 - 250 years old	Conifer Forest 51 - 100 years old	Conifer Forest 26 - 50 years old	Conifer Saplings 11 - 25 years old	Conifer Seedlings 0 - 10 years old	Hardwood Forest	Mixed Hardwood / Conifer Forest	Riparian Forest > 100 years old	Interior Forest	Forest Edge	Non-Forested Wetlands, Ponds	Talus Fields	Caves	Aquatic (Streams, Lakes)	Snags and Logs
ARACHNIDS																
Purnell Web Weaver	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R				
INSECTS															B,F,R	
Fender's scitperlen stonefly																
CRUSTACEANS												B,F,R			B,F,R	
Crayfish																
MOLLUSKS															B,F,R	
Columbia pebblesnail																
FISH															B,F,R	
Bull trout															B,F,R	
Olympia mudminnow															B,F,R	
Chinook salmon															B,F,R	
Coho salmon															B,F,R	
Steelhead															B,F,R	
Mountain sucker															B,F,R	
Pygmy whitefish															B,F,R	
Sandroller																
AMPHIBIANS								B,F,R	B,F,R			B,F,R	B,F,R		B,F,R	B,F,R
Van Dyke's salamander	B,F,R	B,F,R	B,F,R	B,F,R									B,F,R			B,F,R
Larch Mountain salamander	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R							F,R		B,F,R	F,R
Tailed frog	F,R	F,R	F,R	F,R	F,R	F,R		F,R	F,R			B,F,R			B,F,R	
Northern red-legged frog	F,R	F,R	F,R	F,R	F,R	F,R	F,R	F,R	F,R			B,F,R			B,F,R	
Cascades frog	F,R	F,R	F,R	F,R	F,R	F,R			F,R			B,F,R			B,F,R	R
Spotted frog	F,R	F,R	F,R	F,R	F,R	F,R										
REPTILES						B,R	B,R					F,R			F,R	
Northwestern pond turtle																
BIRDS							B,R	B,R	B,R			F			F	
Great blue heron	B,R	B,R	B						B,R						B,F,R	
Harlequin duck	B,R	B,R	B,R	B,R	B,R			B,R	B,R						F,R	
Marbled murrelet	B,R	B,R				F		B,R			B,F,R			B		R
Golden eagle	B,R	B,R					R	B,R	B,R		R	F			F	R
Bald eagle	B,R	B,R						B,F,R	B,F,R	F,R	F					F,R
Northern goshawk	B,F,R	B,F,R	B,F,R	F			B,R	B,R	B,R			F			F	B,R
Osprey	B,R	B,R						B,F,R	B,F	B,F,R	F					B,R
Northern spotted owl	B,F,R	B,F,R	B,F,R				B,F,R	B,F,R	B,F,R		F	F			F	B,R
Vaux's swift	B,F,R	B,F,R	F	F	F	F	F	B,F,R	B,F,R	B,F,R						B,F,R
Pileated woodpecker	B,F,R	B,F,R	B,F,R	F	F	F	F	F	F		B,F,R	B,F				B,R
Western bluebird						B,F	F	F	F		B,F,R					R
Olive-sided flycatcher	B,F	B,F				F,R	B,F,R	B,F,R	B,F,R		B,F,R	B,F,R				
Little willow flycatcher									B,F,R							
MAMMALS						F	F	F	F	F	F					
Gray wolf	F	F							F		F	F	B,F,R		F	F,R
Grizzly bear	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	B,F,R	F		F		F	F	B,F,R	B,F,R	F	B,R
California wolverine	B,F	B,F						B,F,R	B,F,R	B,F,R		F,R	B,F,R		F,R	B,F,R
Pacific fisher	B,F	B,F	F					F,R				F		B,F,R	F	
Townsend's big-eared bat	F,R	F,R	F,R	F,R	F,R	F,R		B,R	B,R					B,R	F	B,R
Fringed myotis	B,R	B,R			F	F	B,R	B,F,R	B,F,R			F		B,F,R	F	B,R
Long-eared myotis	B,F,R	B,F,R	B,F,R	F,R	F,R	F,R	F	B,F,R	B,F,R					B,R	F	B,R
Long-legged myotis	B,F,R	B,F,R	B,F,R	F	F	F	B,F,R									

Table 9-4. Anticipated benefits of the HCP Amendment on special-status species potentially present on the Mineral Tree Farm.

Common Name	Chance of Occurrence	Anticipated Benefits
FISH		
Bull trout	Low	Riparian buffers should improve water quality, control floods, increase LWD, improve pool depth and frequency and increase nutrients for aquatic food chain.
Olympic mudminnow	Low	Riparian buffers will provide shade, nutrients and flood control.
Mountain sucker	Low	Riparian buffers should improve water quality, improve stream channel and pool development and provide shade, nutrients and flood control.
Pygmy whitefish	Low	Riparian buffers should provide shade, nutrients and flood control and improve water quality.
Sandroller	Moderate	Riparian buffers will provide cover, shade, nutrients, flood control and pool development.
INVERTEBRATES		
Columbia pebblesnail	Moderate	Riparian buffers will reduce floods and erosion, improve water quality and increase LWD for food chain and pool development.
Fender's soliperlan stonefly	Moderate	Riparian buffers will result in improvements to stream channel and water quality.
AMPHIBIANS		
Van Dyke's salamander	Present	Riparian buffers will provide habitat and improve dispersal.
Larch Mountain salamander	Moderate	Upland reserves, green tree clumps and Type 5 stream reserves on steep slopes will protect some existing talus habitat.
Tailed frog	Present	Riparian buffers will improve dispersal and protect habitat along DNR stream Types 1, 2 and 3 and the majority of DNR Type 4 streams.
Northern red-legged frog	Present	Riparian buffers will provide habitat and improve dispersal.
Cascades frog	Present	Riparian buffers will provide habitat and improve dispersal opportunities along most suitable aquatic habitats.

Table 9-4. Continued.

Common Name	Chance of Occurrence	Anticipated Benefits
AMPHIBIANS Continued		
Spotted frog	Low	Aquatic habitats will be improved by riparian buffer zones.
REPTILES		
Northwestern pond turtle	Low	Riparian buffers will protect forests around ponds and increase woody debris.
BIRDS		
Great blue heron	Moderate	Riparian buffers will improve fishing success and increase retention of large trees and snags for nesting or roosting.
Harlequin duck	Moderate	Riparian buffers will improve water quality and food sources and provide LWD for loafing sites.
Marbled murrelet	Moderate[1]	Retention of old-growth trees in riparian buffers could provide potential nest sites.
Golden eagle	Present	Riparian buffers and leave tree quotas will increase the number of large trees and snags available for nesting or perch-hunting.
Bald eagle	Moderate	Riparian buffers could improve fishing success and will protect large trees and snags for nesting, perching and roosting.
Northern goshawk	Present	Riparian buffers and leave tree quotas will retain some mature and old-growth forest. Dispersal landscape matrix will probably increase grouse and hare populations.
Osprey	Moderate	Riparian buffers could improve fishing success and will protect large trees and snags for nesting, perching and roosting.
Vaux's swift	Present	Retention of old-growth trees and snags in buffer zones and leave tree areas could provide suitable nest and roost sites.

[1] Surveys of the tree farm conducted according to PSG protocol determined presence but no occupancy for the marbled murrelet.

Table 9-4. Continued.

Common Name	Chance of Occurrence	Anticipated Benefits
BIRDS Continued		
Pileated woodpecker	Present	Retention of old-growth trees and snags in buffer zones and leave tree areas and downed logs will provide potential nesting and foraging sites.
Western bluebird	Moderate	Retention of snags and green trees in clearcuts will increase potential nesting sites.
Olive-sided flycatcher	Moderate	Retention of mature and old-growth forest in reserves along streams, wetlands, lakes and steep slopes will provide a steady source of nesting habitat.
Little willow flycatcher	Moderate	Riparian buffers will protect and improve wetland and riparian habitats.
MAMMALS		
Gray wolf	Moderate	Riparian buffers will likely improve prey populations along waterways. Dispersal habitat matrix is expected to increase prey abundance in uplands. Road closures and seasonal den protection will reduce human disturbance.
Grizzly bear	Low	Road closures and seasonal den protection will reduce human disturbance. Riparian buffers will increase fish and game species abundance.
California wolverine	Low	Reserves on steep slopes and in riparian areas will improve fish and game species abundance. Road closures and seasonal den protection will reduce human disturbance.
Pacific fisher.	Moderate	Riparian buffers are likely to improve prey populations and improve dispersal opportunities. Seasonal den protection will reduce human disturbance.
Townsend's big-eared bat	Moderate	Caves will be protected (if present).
Fringed myotis	Moderate	Caves will be protected (if present). Riparian buffers will protect and improve wetland and riparian habitats.
Long-eared myotis	Moderate	Caves will be protected (if present). Retention of old-growth forest in reserves along streams, wetlands and lakes will protect riparian habitats most often used.
Long-legged myotis	Moderate	Caves will be protected (if present). Retention of mature forest in reserves along streams, wetlands and lakes will protect riparian habitats most often used. Increased snag retention will create reserves and leave-tree areas.